
Energy Taxation and Salience: Evidence and Implications

Xavier Labandeira

Universidade de Vigo and Economics for Energy

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- **Why energy taxes?**
 - **Saliency and taxation**
 - **Saliency in transport taxation**
 - **Electricity**
 - **Summing up: Accuracy, and policy trade-offs**
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Why energy taxes?

- Revenue; Environment; Energy dependence
 - Supply: Innovation and dynamic efficiency
 - Demand: Habits, Investments and Distribution
 - Crucial for decarbonization: 50% abatement related to EE
 - Really? Low price elasticities
 - Sizable transport fuel taxes...
 - but, what about electricity (again key to decarbonization)?
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Selected energy taxes in the EU, 2016

	Fueóleo ligero para hogares (por cada 1000 litros)				Gasóleo de automoción para uso no comercial (por litro)				Gasolina sin plomo (95 octanos) (por litro)				Gas Natural para hogares (por cada MWh GCV)				Electricidad para hogares (por MWh)			
	Accisa	IVA (%)	Total	% carga fiscal media ponderada de la UE-22	Accisa	IVA (%)	Total	% carga fiscal media ponderada de la UE-22	Accisa	IVA (%)	Total	% carga fiscal media ponderada de la UE-22	Accisa	IVA (%)	Total	% carga fiscal media ponderada de la UE-22	Accisa	IVA (%)	Total	% carga fiscal media ponderada de la UE-22
Alemania	77,66	19	177,01	47,66%	0,59	19	0,81	84,50%	0,83	19	1,09	94,69%	6,96	19	20,82	95,93%	140,13	19	200,13	219,53%
Austria	133,15	20	256,82	69,14%	0,50	20	0,71	73,89%	0,60	20	0,83	71,75%	9,28	20	24,63	113,49%	53,62	20	94,63	103,81%
Bélgica	22,76	21	120,53	32,45%	0,58	21	0,82	85,83%	0,75	21	1,03	89,60%	4,76	21	16,10	74,16%	59,39	21	108,78	119,33%
Dinamarca	329,73	25	540,53	145,53%	0,42	25	0,64	66,57%	0,61	25	0,88	76,47%	28,48	25	42,72	196,83%	118,00	25	179,02	196,38%
Eslovaquia	n.d.	n.d.	n.d.		0,74	20	1,09	113,45%	1,03	20	1,44	124,79%	0,00	20	16,48	75,92%	0,00	20	51,00	55,95%
Eslovenia	406,67	22	620,44	167,04%	0,80	22	1,12	116,95%	0,94	22	1,30	112,43%	10,84	22	28,81	132,71%	35,28	22	83,94	92,08%
España	131,94	21	277,46	74,70%	0,55	21	0,81	84,67%	0,69	21	0,99	85,62%	3,49	21	24,36	112,22%	13,13	21	61,34	67,29%
Estonia	198,13	20	384,38	103,48%	0,70	20	1,01	105,40%	0,76	20	1,07	92,98%	6,27	20	18,11	83,42%	25,18	20	48,21	52,89%
Finlandia	230,14	24	383,66	103,29%	0,55	24	0,79	82,08%	0,73	24	1,02	88,12%	n.d.	n.d.	n.d.		24,19	24	55,99	61,41%
Francia	117,44	20	245,89	66,20%	0,62	20	0,85	88,42%	0,79	20	1,05	91,54%	5,43	20	14,16	65,23%	42,40	20	72,98	80,06%
Grecia	323,94	24	516,23	138,98%	0,46	24	0,74	77,49%	0,94	24	1,31	113,43%	7,61	13	24,22	111,59%	50,85	13	79,44	87,14%
Hungría	n.d.	n.d.	n.d.		0,83	27	1,35	140,55%	0,91	27	1,43	123,94%	0,00	27	17,74	81,73%	0,00	27	56,22	61,67%
Irlanda	143,86	13,5	221,88	59,74%	0,59	13,5	0,84	87,30%	0,72	13,5	0,99	86,34%	4,35	13,5	14,82	68,27%	0,00	13,5	31,18	34,20%
Italia	537,61	22	796,60	214,47%	0,82	22	1,13	117,79%	0,97	22	1,32	114,13%	20,29	22	34,81	160,39%	92,00	10	122,67	134,56%
Letonia	86,86	21	283,59	76,35%	0,69	21	1,01	105,49%	0,87	21	1,24	107,20%	n.d.	n.d.	n.d.		52,55	21	107,84	118,30%
Luxemburgo	11,11	14	71,08	19,14%	0,37	17	0,52	54,17%	0,51	17	0,69	59,69%	1,20	8	4,90	22,57%	27,22	8	40,67	44,61%
Países Bajos	593,34	21	782,11	210,57%	0,59	21	0,83	86,43%	0,94	21	1,24	107,90%	31,71	21	47,60	219,31%	-1,20	21	32,05	35,16%
Polonia	128,89	23	391,85	105,50%	0,81	23	1,23	128,30%	0,93	23	1,37	118,99%	0,00	23	22,04	101,53%	11,11	23	74,43	81,64%
Portugal	588,14	23	887,63	238,97%	0,77	23	1,12	117,10%	1,13	23	1,57	135,96%	3,59	23	32,53	149,85%	1,69	23	76,10	83,48%
Reino Unido	161,45	5	189,47	51,01%	0,84	20	1,10	114,92%	0,84	20	1,10	95,33%	0,00	5	3,15	14,51%	0,00	5	10,58	11,61%
Rep. Checa	50,00	21	377,60	101,66%	0,83	21	1,18	123,70%	0,97	21	1,34	116,72%	0,00	21	20,78	95,72%	2,12	21	52,27	57,34%
Suecia	428,26	25	720,26	193,92%	0,59	25	0,87	91,28%	0,66	25	0,94	81,60%	29,92	25	52,92	243,82%	30,23	25	61,45	67,40%
Media ponder.	216,04	18,70	371,43	100,00%	0,68	20,96	0,96	100,00%	0,84	20,96	1,15	100,00%	7,76	18,56	21,71	100,00%	50,51	17,10	91,16	100,00%



A meta-analysis on the price elasticity of energy demand ☆

Xavier Labandeira ^{a, b}, José M. Labeaga ^c ✉, Xiral López-Otero ^a

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Highlights

- An updated and wider meta-analysis on price elasticities of energy demand.
- Energy goods are shown to be price inelastic both in the short and long-term.
- Results are relevant for a proper design and implementation of energy policies.
- Our results refer to energy, as a whole, and specific energy goods.

Salience and taxation

- **Tax salience, ie simplicity to observe and calculate prices inclusive of taxes, is very relevant for demand (Chetty et al., 2009; Colantouni and Rojas, 2015)**
 - **Consumers pay especial attention when tax rates, price elasticities and expenditure share are large**
 - **Ad valorem and unit taxes have different effects, depending on how they are seen in prices (Goldin and Homonoff, 2013)**
 - **Optimal tax rates should take this into account**
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Salience and transport taxation

- **Sizeable literature on car fuel taxes**
 - **Davis and Kilian (2011) show that policy assessments based on price elasticities are not reliable due to tax salience:**
 - **High presence in media**
 - **Persistence (vs volatility in prices)**
 - **Robust empirical evidence: Scott (2012), Baranzini and Weber (2013), Li et al. (2014)**
 - **Similar results from carbon taxes (on transport) in Sweden (Anderson, 2017) and British Columbia (Rivers and Schaufele, 2015; Bernard and Kihian, 2018; Lawley and Thivierge, 2018)**
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EDITED BY
Marta Villar Ezcurra,
Janet E. Milne, Hope Ashiabor
and Mikael Skou Andersen

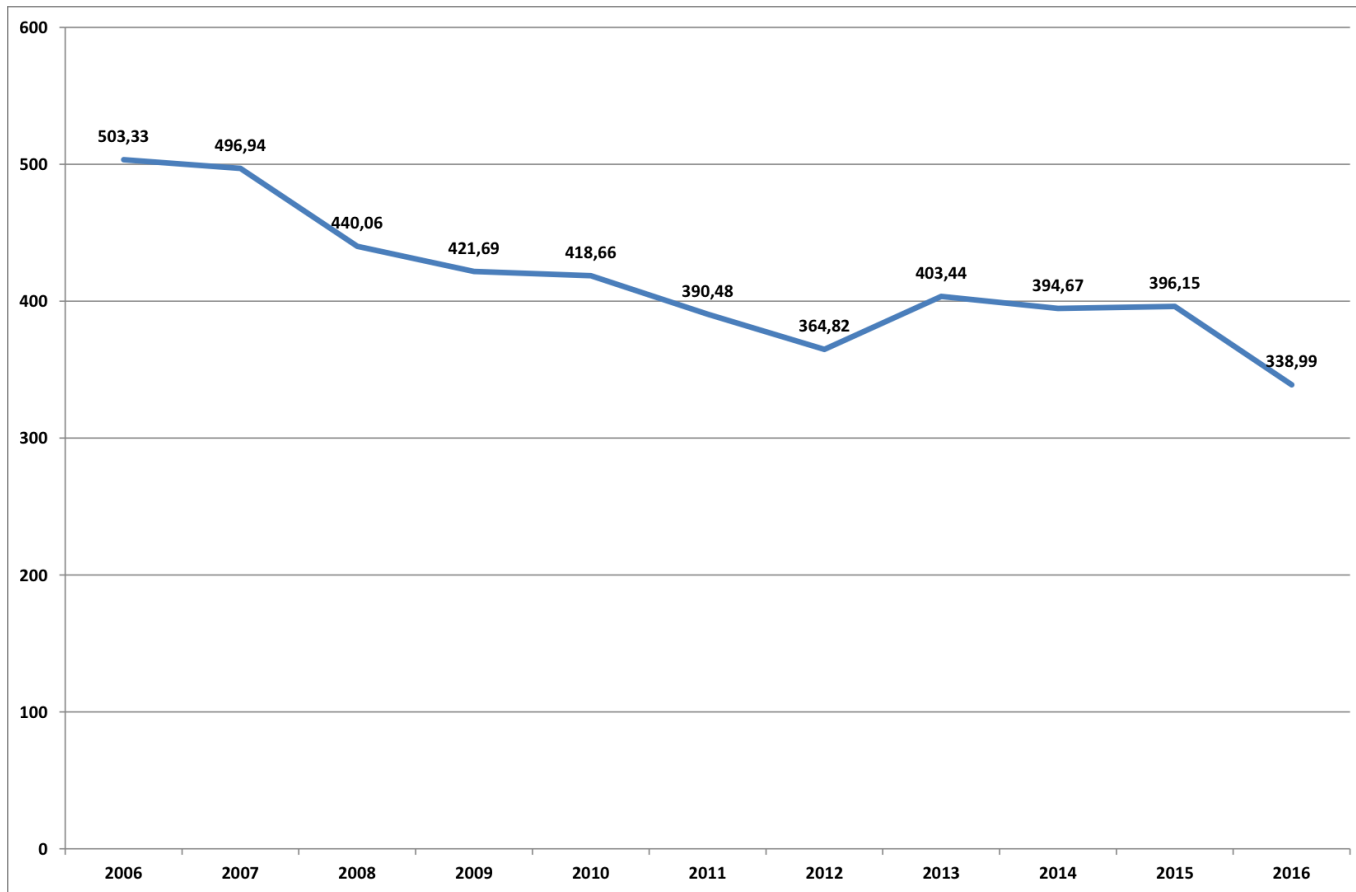
EE
Elgar

The background of the cover features a detailed, teal-colored pattern of leaf veins, resembling a lace or mesh texture. The pattern is set against a light blue gradient background.

Environmental Fiscal Challenges for Cities and Transport

Critical Issues in Environmental Taxation **VOLUME XXI**

Tax revenue per car, Spain



Agencia Tributaria, 2018

Comprehensive and Automated Vehicle Tax (CAVT)

	Zone 1 (urban)	Zone 2 (semi-urban)	Zone 3 (non-urban)
Vehicle type A	<i>Peak</i> Access charge 1 Time charge 1a (...) km charge	<i>Peak</i> Time charge 2a (...) km charge	km charge
	<i>Non-peak</i> km charge	<i>Non-peak</i> km charge	
Vehicle type B	(...)	(...)	(...)

Vehicle type A	Payment					
		Congestion	Local P/ noise	Global P	Accidents	Infrastructures
Access charge	Euros	X	-	-	-	-
Time charge 1a	Euros/hour	X	X	-	-	-
km tax	Euros/km	-	X	X	X	X

Salience, transport and transition...

- **Will a CAVT be effective?**
 - **Finkelstein (2009) shows that optimal electronic tolls show a reduction in the elasticity of driving; therefore these tolls can obtain more revenues than conventional tolls (lower political costs)**
 - **How to increase sales of cleaner cars?**
 - **Gallagher and Muehlegger (2011) show larger effects from VAT reductions wrt income tax deductions due to different salience**
 - **Through salient taxes wrt higher prices (Antweiler and Gulati, 2016; Rivers and Schaufele, 2017)**
 - **Aviation: Substantial demand reaction to the 2012 US mandate to include taxes in final prices**
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Electricity

- **Very limited literature:**
 - **Salience might be low in complex tariff structures**
 - **Most papers focus on the provision on information to consumers (costs, relative consumption, etc.)**
 - **As in transport, important changes in this domain: new EE technologies, measurement and information to consumers**
 - **Salient taxes therefore might be particularly necessary in the electricity context**
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economics energy

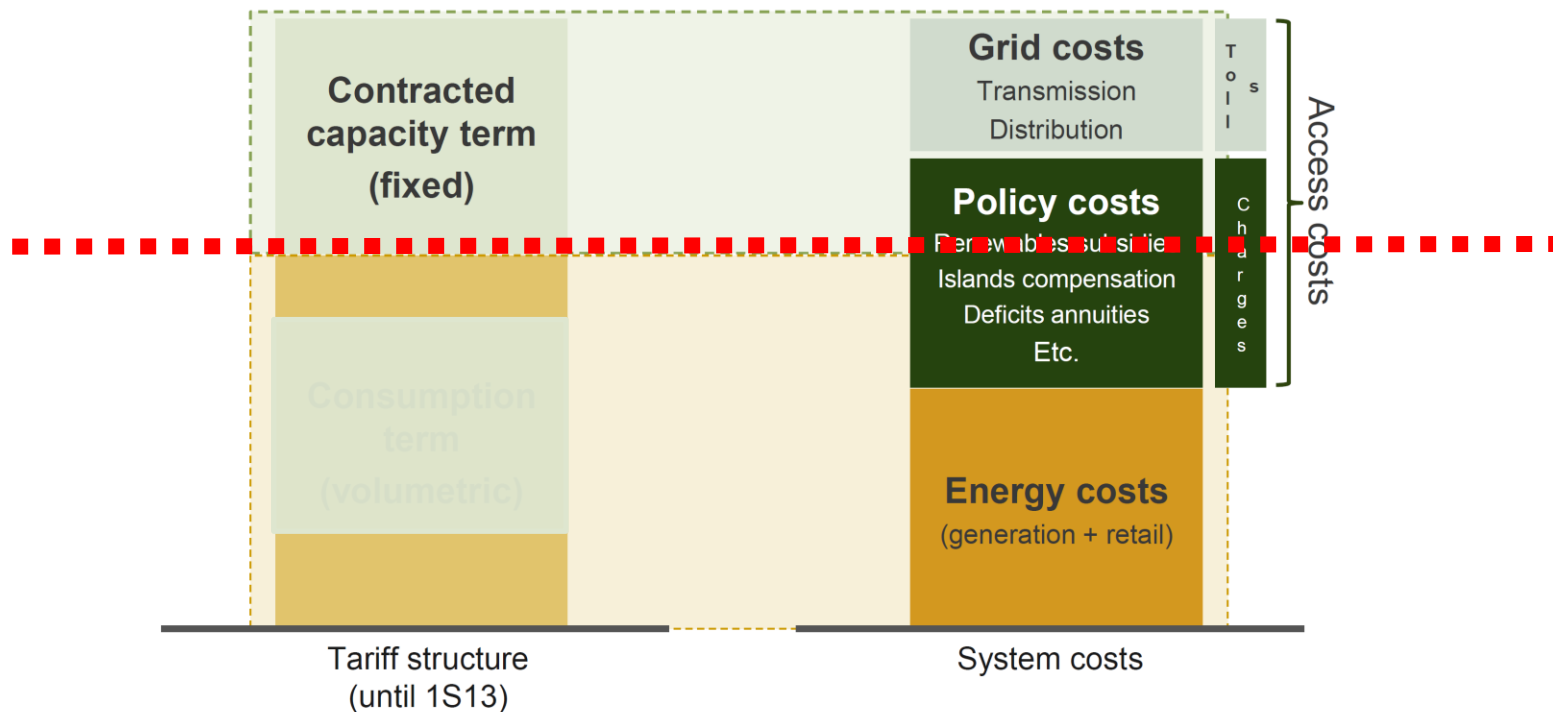
WP 02/2018

Deep reforms in electricity
pricing: evidence from a quasi
experiment

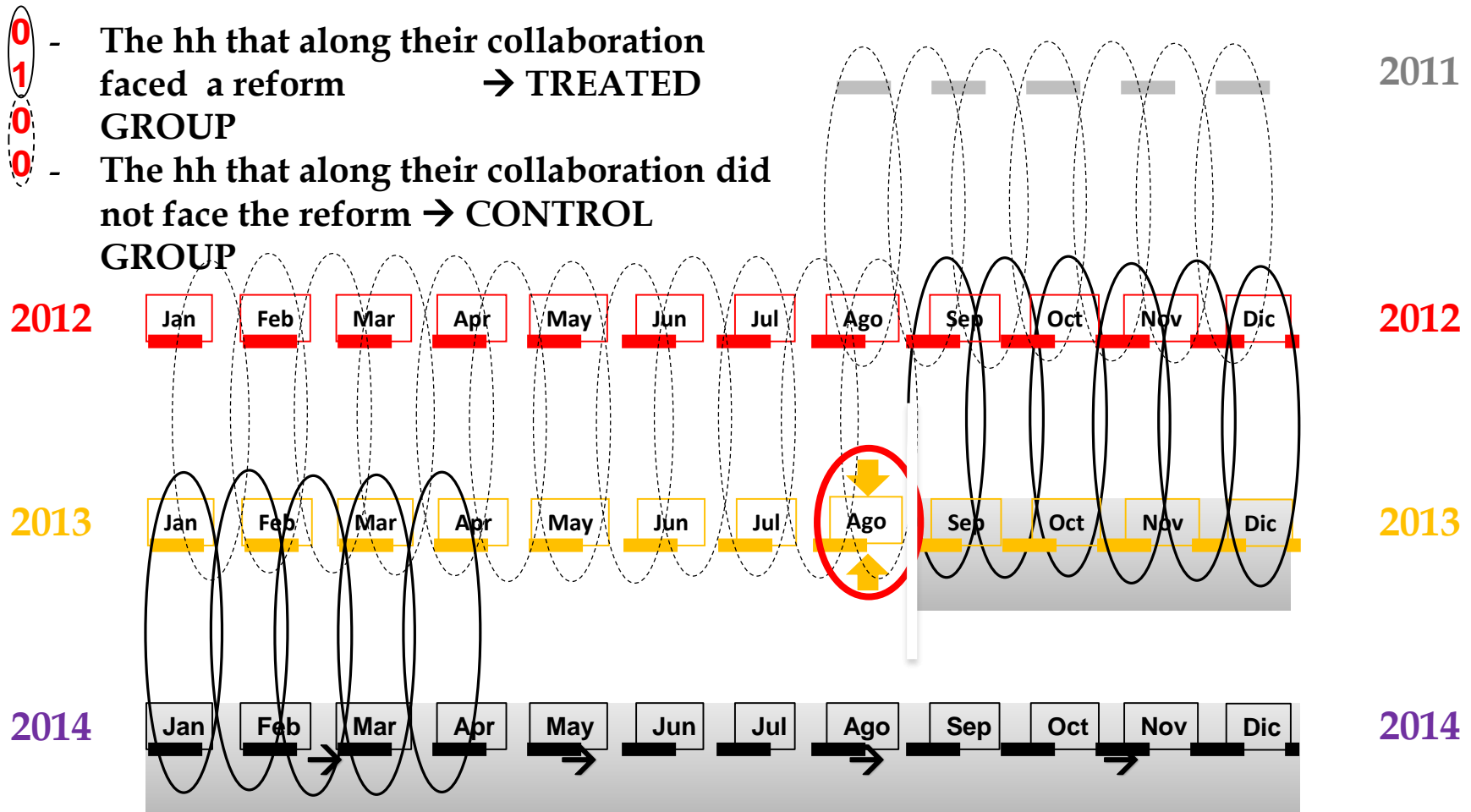
Xavier Labandeira
José M. Labeaga
Jordi Teixidó

Soria's 2013 electricity reform

Consumers pay through the bill
the energy cost and the access cost



The quasi-experiment



$$\ln(q_{lit}) = \alpha + \beta \ln(p_{lit}) + \beta \ln(y_{lit}) + \gamma X_{lit} + \delta T_{lit} + \theta_i + \epsilon_{lit}$$

Summing up: Accuracy and policy trade-offs

- **Salient taxes may induce larger-than-expected behavioral changes: conventional price elasticities would have a limited validity for policy assessment**
 - **Another reason to support the use of environmental taxation in energy transitions**
 - **Tax salience should, in any case, be actively pursued**
 - **More or less salient instruments would have clear revenue consequences**
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THANKS

<http://labandeira.eu>

xavier@uvigo.gal
